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Transmitted light characteristics in Nova gasbag plasmas* J.D. MOODY, B.J. MACGOWAN, R.K. KIRKWOOD, C.A. BACK, S.H. GLENZER, D.E. MUNRO, R.L. BERGER, Lawrence Livermore National Laboratory — Propagation of laser energy through a long scalelength plasma is important to ICF because it determines the laser intensity and spot characteristics on the wall of an indirect drive hohlraum. Effects such as inverse bremmstrahlung absorption, stimulated scattering, filamentation, and beam deflection in the hohlraum plasma can both attenuate the amount of transmitted light as well as spread and shift the laser spot on the hohlraum wall. We describe measurements of time resolved power, angular spreading, and spectral character of a 351 nm probe laser transmitted through Nova gasbag targets. These plasmas have $T_e = 3$ to 4 keV, $n_e/n_{cr} = 0.07$ to 0.15, incident laser intensity ranging from 0.8 to 6×10^{15} W/cm^2 in an f/4.3 or f/8 beam cone. We study the effects of plasma density, laser intensity, plasma composition, and laser smoothing on the nature of the transmitted light. We will discuss the measurements and compare with calculations using the hydrodynamic code Lasnex and the three dimensional filamentation code F3D.
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